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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,926	02/04/2002	Michael Hahn	HAHN 3	4338
27964	7590	04/22/2004	EXAMINER	
HITT GAINES P.C. P.O. BOX 832570 RICHARDSON, TX 75083			MACCHIAROLO, PETER J	
			ART UNIT	PAPER NUMBER

2879

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n N .		Applicant(s) <i>M</i>	
	10/066,926		HAHN, MICHAEL	
	Examiner		Art Unit	
	Peter J Macchiarolo		2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because figure 3 fails to clearly show a substrate containing a plurality of substrate rows or layers, as described in the specification at page 3 lines 9-12. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the waveguide array with transmitted electromagnetic energy being normal to the waveguide array must be shown or the feature(s) canceled from the claim(s). The Examiner recommends adding a new reference numeral pointing to the waveguide array as claimed. No new matter should be entered.
3. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. **Claim 10 is objected to because of the following informalities:**
Claim recites the limitation, “forming and said waveguide face.” The Examiner reads, “forming said waveguide face.” Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

7. Claims 1, 6, 10, and 14 recite the electromagnetic energy is transmitted substantially normal to the waveguide array. However, the figures fail to show this configuration, but instead show the electromagnetic energy being transmitted askew to a transmitting face of the array, but normal to one of the dashed lines surrounding the array. Therefore, figure 2 leads the Examiner to believe that the dashed line is indeed the actual array with the substrates (8) being placed therein, as also inferred from the Summary of the Invention at page 3 of the instant Specification. “[A] substrate containing a plurality of substrate rows or layers.” If this is the case, the Examiner recommends adding a reference numeral to the dashed line to indicate the array such as illustrated below. Further, the claimed language, “normal to said waveguide array” is unclear. The Examiner reads, “normal to a transmitting face of said waveguide array.”

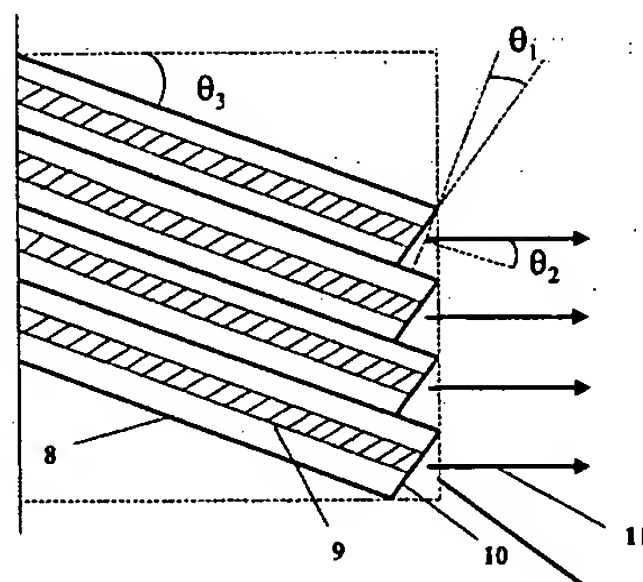


Figure 2

waveguide array transmitting face

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8. Further, claims 1 and 6 recite each of the optical fibers are “aligned at an offset angle.”

This is unclear. The Examiner reads, “aligned at an offset angle to a face of said waveguide array” as taught in Applicant’s figure 2 and page 3 of the instant Specification.

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. **Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

11. The refractive indices of the fiber optic cable and the waveguide array substrate are needed to calculate the refraction of the electromagnetic light at the fiber optic cable/waveguide array substrate interface, i.e. at the row face (fig. 2, 10), so the electromagnetic energy transmitted from each of the waveguide faces is substantially parallel to each other and substantially normal to a transmitting face of the waveguide array. However, instant specification and drawings are silent to these refractive indices, thereby not enabling one skilled in the art to properly make the array.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engelberth et al (USPN 6393187; "Engelberth").**

14. In regards to claims 1, 2, 6, Engelberth discloses in figures 1a and 2, a waveguide array for transmitting electromagnetic energy (visible light) comprising a plurality of substrate rows (12) and at least one waveguide (optic fibers 11) in each of the plurality of substrate rows, each of said waveguides having a central axis (center of 15) and a waveguide face being angled to said waveguide central axis, wherein each of the waveguides are aligned substantially parallel to each other in the substrate rows and at an angle to a face of said waveguide array, and shows in figure 9 the electromagnetic energy transmitted from each of the waveguide faces is substantially parallel to each other.

15. Engelberth is silent to the light transmitted from each of the waveguide faces being substantially normal to a transmitting face of said waveguide array.

16. However, assuming Engelberth's array transmits into free space as discussed under Engelberth's Background of the Invention heading, one will recognize that light will obviously be emitted substantially normal to the transmitting face of the waveguide array, which allows for switching light beams directly, without converting the light to electrical energy.

17. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Engelberth's array with the light being transmitted from each of the waveguide faces being substantially normal to a transmitting face of said waveguide array to help realize for a high speed purely optical switch.

18. In regards to claims 10, 11, and 14, Engelberth discloses in figures 1a and 4a-4d, a method for transmitting electromagnetic energy in a waveguide array comprising the steps of creating a plurality of substrate rows (12), embedding at least one waveguide (optic fibers 11) in each of said plurality of substrate rows, wherein each of said waveguides has a central axis (15) and a waveguide face for transmitting said electromagnetic energy, forming said waveguide face at an angle to said waveguide central axis; and aligning each of said waveguides in each of said plurality of substrate rows substantially parallel to each other and at an offset angle to a face of said waveguide array.¹ Engelberth further shows in figure 9 that the electromagnetic energy transmitted from each of the waveguide faces is substantially parallel to each other.

19. Engelberth is silent to the electromagnetic energy transmitted from each of the waveguide faces being substantially normal to a transmitting face of said waveguide array.

20. However, assuming Engelberth's array transmits into free space as discussed under Engelberth's Background of the Invention heading, one will recognize that light will obviously be emitted substantially normal to the transmitting face of the waveguide array, which allows for switching light beams directly, without converting the light to electrical energy.

¹ Engelberth, col. 3, line 45 to col. 4, line 27.

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21. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Engelberth's array with the light being transmitted from each of the waveguide faces being substantially normal to a transmitting face of said waveguide array to help realize for a high speed purely optical switch.

22. In regards to claims 3, 4, 7, 9, 12, 13, 15, and 17, Engelberth discloses the optical fiber comprises glass and the substrate rows comprise metal.²

23. Engelberth is silent to the substrate rows comprising one or more selected from the group consisting of silicon, ceramics, and metal oxides.

24. However, it would have been obvious to one having ordinary skill in the art that the time the invention was made to use silicon, ceramics, or metal oxides, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

25. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Engelberth's substrate rows comprising one or more selected from the group consisting of silicon, ceramics, and metal oxides to ease manufacturing processes, specifically, simplifying Engelberth's polishing process.

26. In regards to claims 8 and 16, Engelberth is silent to the exact type of fiber which can be used in the array.

² Engelberth, col. 4, ll. 13-15.

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27. However, it would have been an obvious matter of design choice to utilize an optical fiber which is one or more selected from the group consisting of single mode fibers, multi-mode fibers, and grated index fibers, since Applicant has not adequately disclosed any testing or analytical data which establishes criticality for these modifications, or recites any specific advantage the invention benefits from over the prior art from this modification. It appears that Engelberth's array would perform equally well when the optic fiber consists of single mode fibers, multi-mode fibers, and grated index fibers. Further, Applicant discloses that these fibers are well known in the art.³

28. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Engelberth's array with the optical fiber being one or more selected from the group consisting of single mode fibers, multi-mode fibers, and grated index fibers, depending on the array's intended operating status. Further, material availability will also be a motivating factor.

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

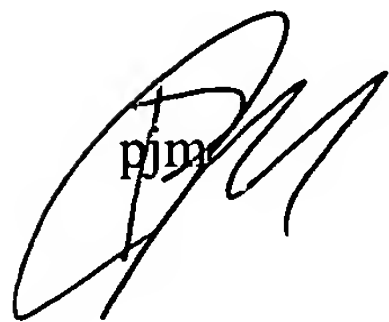
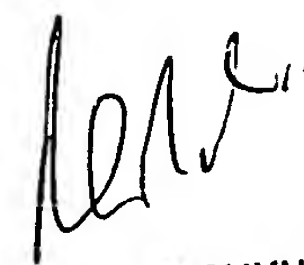
30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375. The examiner can normally be reached on 8:30 - 5:00, M-F.

³ Specification, p. 4, ll. 16-17.

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31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571) 272-2475. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be "Pjm", with a large, stylized flourish extending from the end.A handwritten signature in black ink, appearing to be "Nimeshkumar D. Patel", with a large, stylized flourish extending from the end.

NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800